Maine Center for Disease Control and Prevention
Division of Infectious Disease

Prevention and Control of Influenza In Long-term Care Facilities 2008-2009

October 2008

Background

This document contains information based on the Centers for Disease Control and Prevention (CDC) documents, "Prevention and Control of Influenza: Recommendations of the Advisory Committee on Immunization Practices (ACIP), 2008" (http://www.cdc.gov/mmwr/preview/mmwrhtml/rr57e717a1.htm),[1] "Infection Control Measures for Preventing and Controlling Influenza Transmission in Long-Term Care Facilities" (http://www.cdc.gov/flu/professionals/infectioncontrol/longtermcare.htm),[2] and other states' resources.[3,4]

Influenza can severely impact long-term care facilities: Attack rates may reach 50% or more, with hospitalization rates as high as 25% and fatality rates as high as 10% in some populations. Infection among healthcare workers during outbreaks is also common, with attack rates of 20%-35%. This report summarizes a multi-faceted approach to influenza outbreak management in long-term care facilities to enable a timely and effective response.

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Section I: Key Recommendations for 2008-2009

1. **Vaccinate all residents and staff against influenza.** Ensure that all residents have received one dose of pneumococcal vaccine.

The Centers for Medicaid and Medicare Services (CMS) requires nursing homes to offer all residents influenza and pneumococcal vaccines and to document results. Each resident is to be vaccinated unless medically contraindicated, the resident or legal representative refuses, or there is a vaccine shortage.

Each influenza season approximately 25% of all health care workers become infected with influenza. Influenza is often introduced into or spread through a facility by staff or visitors. Additionally, influenza vaccine may be less effective in the very elderly and although they are immunized, some residents may remain susceptible to influenza. Their exposure to influenza must be reduced. It is known that by vaccinating long-term facility staff, mortality among elderly patients is reduced.

Influenza vaccination of health care workers protects the health care workers, their patients and their families, enhancing patient and worker safety.
Every effort should be made to vaccinate all healthcare workers.

State-supplied influenza vaccine is available through the Maine Immunization Program (MIP). To order state-supplied influenza vaccine, contact MIP by calling 207-287-3746. Long-term care facilities are a top priority for state-supplied influenza vaccine for their residents and employees. However, unused doses of state-supplied influenza vaccine cost thousands of dollars and threaten the viability of the MIP influenza vaccine program. Reduce unused vaccine by reporting vaccine usage monthly and contacting MIP when excess vaccine is identified so it can be redistributed.

MIP provides pneumococcal vaccine for all Maine residents for whom this vaccine is recommended, including all residents of LTC facilities and those employees with medical conditions that put them at risk of pneumococcal disease. To order state-supplied pneumococcal vaccine, contact MIP by calling 207-287-3746.

2. **Develop policies to allow for the rapid initiation of antivirals when needed. Only use oseltamivir or zanamivir for the treatment and prophylaxis of influenza.**

The CDC Recommendations of the Advisory Committee on Immunization Practices states "Use of antiviral drugs for treatment and chemoprophylaxis of influenza is a key component of influenza outbreak control in institutions."
http://www.cdc.gov/mmwr/preview/mmwrhtml/rr57e717a1.htm

3. **Develop a plan tailored to your facility to help plan how you will respond to potential outbreaks of influenza this season. Make sure the Medical Director is informed and has authorized the use of antivirals if necessary.**

Section II: Prevention Measures

Vaccination

1. Vaccinate all residents and staff using a systematic approach to increase immunization levels.
    - Vaccinate all residents and staff as soon as vaccine is available. Vaccinate residents admitted from October through March upon admission.
    - Ensure your facility has a written policy on immunizations that includes annual influenza vaccination for all residents and staff, and pneumococcal vaccine (PPV23) for all residents.
    - Obtain consent for vaccination from residents or their family members on admission. Include Vaccine Information Statements (VIS) in admission packets.
    - Implement standing orders for administration of influenza and pneumococcal vaccines.
    - Influenza and pneumococcal vaccines are safe and effective when administered at the same time by using separate syringes and given at different anatomical sites.
    - Perform chart audits to ensure that there is documentation in every chart that the resident has been offered annual influenza vaccine and PPV23 vaccine.

Consider residents with uncertain immunization histories NOT immunized and vaccinate accordingly. The benefits of vaccination far outweigh any concerns about revaccination.

2. Encourage family members and visitors to receive influenza vaccine.
    - Make them aware of their role in the transmission of influenza to residents.
    - To find out where to get influenza vaccine, family members may contact their healthcare providers or visit the Maine CDC influenza website: http://www.maine.gov/dhhs/boh/Influenza.htm

3. Encourage family members, visitors and all staff to practice respiratory etiquette to prevent the transmission of respiratory illnesses.
    - Post education materials on respiratory hygiene.
    - Promote frequent hand washing and the use of alcohol-based hand gel.

- Educational materials on respiratory hygiene are available at www.maine.gov/dhhs/boh/Influenza.htm and www.cdc.gov/flu

Section III: Early Detection of Influenza

Despite its clear benefits, vaccination does not offer complete protection against influenza viruses, and outbreaks can still occur. Antigenic drifts and shifts, and imperfect matching between the vaccine and circulating strains may limit vaccine effectiveness. The diminished immune response that sometime occurs with advanced age and underlying medical conditions may further decrease overall vaccine effectiveness.

- Prompt recognition of influenza and the initiation of infection control measures can help prevent influenza from spreading.
- Reliable, timely detection depends upon prompt recognition of clinical signs and symptoms and submissions of respiratory specimens for laboratory diagnosis.

Influenza-like illness (ILI) is defined as fever of >100° F AND cough and/or sore throat, in the absence of a known cause.

Suspect an outbreak if:

- Occurrence of acute febrile respiratory illness (AFRI) in residents; OR
- Three or more staff who work in close proximity to each other and report acute febrile respiratory illness; OR
- There is a sudden increase in staff absenteeism.

What to do if an outbreak is suspected?

1. Request influenza testing of patients or staff with recent onset of symptoms: Diagnostic testing for influenza is available through Maine CDC at the State Health and Environmental Testing Laboratory (HETL). Nasopharayngeal (NP) swabs are recommended.
2. Each nursing unit should immediately report any resident(s) or staff with ILI to the facility administrator or director of nursing. A case log may be kept to track the location and health status of residents with ILI (Appendix 2).
3. Notify Maine CDC by calling 1-800-821-5821: Epidemiologists can help refine interventions, notify other facilities, and facilitate specimen collection for influenza testing at HETL
4. When an outbreak is suspected, but not yet laboratory-confirmed, the following control measures may be considered:
    a. Notify the facility medical director that an outbreak of influenza is suspected.
    b. Cohort patients with suspected influenza on a designated ward and place on droplet precautions.
    c. Restrict movement of staff between wards.
    d. Limit visitors.
    e. Limit new admissions.

f. Restrict ill staff from patient care.
g. Treat influenza cases with antiviral medications, unless contraindicated (see Antiviral section).
h. Offer prophylaxis to exposed non-ill patients and unvaccinated staff (see Antiviral section).

Definitions

Cluster: Three or more cases of acute febrile respiratory illness (AFRI) occurring within 48 to 72 hours, in residents who are in close proximity to each other (e.g., in the same area of the facility).

Outbreak: A sudden increase of AFRI cases over the normal background rate or when any resident tests positive for influenza. One case of confirmed influenza by any testing method in a long-term care facility resident is an outbreak.

Centers for Disease Control and Prevention. Infection Control Measures for Preventing and Controlling Influenza Transmission in Long-Term Care Facilities. www.cdc.gov/flu/professionals/infectioncontrol/longtermcare.htm

What to do if a cluster or outbreak is confirmed?

1. Cohort infected residents:
   a. Keep residents with suspected or confirmed influenza in a private room or in a room with other residents with the same symptoms.
   b. Limit staff from "floating" to non-infected wards, if possible.
2. In addition to Standard Precautions, place symptomatic residents on Droplet Precautions.
3. Cancel or postpone group activities.
4. Limit new admissions until the incidence of new cases has reached zero. If new admissions are necessary, admit residents to a non-infected ward or to a ward that has had no new cases for at least 2 days.
5. Limit visitation and consider restricting visitation of children using posted notices.
6. Monitor personnel absenteeism due to respiratory symptoms and exclude those with influenza-like illness from patient care for 5 days following onset of symptoms, when possible.
7. Re-offer influenza vaccination to unvaccinated staff and residents.
8. Initiate chemoprophylaxis as early as possible to reduce the spread of the virus. Administer chemoprophylaxis to all residents, regardless of vaccination status, and continue for a minimum of 2 weeks, or 1 week after the end of the outbreak (date the last case was identified). [1]

Use of Antiviral Medications

The use of antiviral medications is approved by Maine Care when a laboratory-confirmed case of influenza is identified in a long-term care facility resident.

- The formulary allows for the use of Oseltamivir at the rate of 10 capsules per patient per month.

- In the event of antiviral prophylaxis using Oseltamivir at a long-term care facility, Maine Care recommends seeking prior authorization for the 2-week course, noting that the patient is a resident of a long-term care facility.
- There are no restrictions for the use of Zanamivir.

1. **Treatment**
   - Two antiviral medications are recommended for the treatment of influenza
     - Zanamivir
       - Effective for Influenza A/B
       - Dosage 10 mg twice daily for persons aged 65 years and older
     - Oseltamivir
       - Effective for Influenza A/B
       - Dosage 75 mg twice daily for persons aged 65 years and older
   - Initiate within 2 days of illness onset
   - Recommended duration of treatment is 5 days
2. **Chemoprophylaxis**

Chemoprophylactic drugs are not a substitute for vaccination. They can be used as an adjunct in preventing and controlling influenza.

Drug Resistance

Although resistance to Oseltamivir was increasingly reported in the 2007-08 influenza season, less than 5% of the viruses circulating in the United States during this season were resistant. Oseltamivir and Zanamivir continue to be the recommended antivirals for influenza in the United States. The use of Adamantanes is not recommended due to the high prevalence of resistance to this class of drugs worldwide.

Centers for Disease Control and Prevention. Antiviral Drug-Resistant Strains of Seasonal Influenza Virus. www.cdc.gov/flu/professionals/antivirals/resistance.htm

During an outbreak, chemoprophylaxis should

- Be administered to all residents, regardless of influenza vaccination status;
- Continued for a minimum of 2 weeks;
- Continued until approximately 1 week from the date when the last case of influenza among either residents or staff was identified, if new cases continue to occur after the first two weeks of prophylaxis.

The dosage for each resident should be determined individually because recommendations vary by age group and medical conditions (see Appendix 1). Chemoprophylaxis also can be offered to unvaccinated staff that provide care to persons at high risk. Prophylaxis should be considered for all employees, regardless of their vaccination status, if the outbreak is caused by a strain of influenza that is not well matched by the vaccine.[1]

For questions or consultations or to report an outbreak please call Maine CDC at 1-800-821-5821. For downloadable flu materials including posters visit:
http://www.maine.gov/dhhs/boh/Flu%20Posters.htm
http://www.cdc.gov/flu/professionals/flugallery/index.htm

Section IV: References and Other Sources of Information

1. Centers for Disease Control and Prevention. Prevention and Control of Influenza: Recommendations of the Advisory Committee on Immunization Practices (ACIP), 2008. *MMWR* 2008;57 (RR-7);1-45. http://www.cdc.gov/mmwr/preview/mmwrhtml/rr57e717a1.htm
2. Centers for Disease Control and Prevention. Infection Control Measures for Preventing and Controlling Influenza Transmission in Long-Term Care Facilities. www.cdc.gov/flu/professionals/infectioncontrol/longtermcare.htm Accessed on September 22, 2008.
3. Massachusetts Department of Public Health. Control of Influenza and Pneumococcal Disease in Long-term Care Facilities, 2008-2009. http://www.mass.gov/Eeohhs2/docs/dph/cdc/flu/long_term_care_control.pdf Accessed September 22, 2008.
4. Centers for Disease Control and Prevention. Influenza Web Site. www.cdc.gov/flu/
5. Maine Department of Health and Human Services. Maine CDC Influenza Web Site. www.maine.gov/dhhs/boh/Influenza.htm
6. Centers for Disease Control and Prevention. Antiviral Drug-Resistant Strains of Seasonal Influenza Virus. www.cdc.gov/flu/professionals/antivirals/resistance.htm Accessed on October 10, 2008.

Appendix 1: Recommended daily dosage of influenza antiviral medications for treatment and chemoprophylaxis – Unites States[1]

This table and related footnotes are taken directly from the Prevention and Control of Influenza: Recommendations of the Advisory Committee on Immunization Practices (ACIP), 2008 Statement available at http://www.cdc.gov/mmwr/preview/mmwrhtml/rr57e717a1.htm

	Age group (yrs)				
Antiviral agent	**1-6**	**7-9**	**10-12**	**13-64**	**≥65**
Zanamivir*					
Treatment, influenza A and B	N/A†	10 mg (2 inhalations) twice daily	10 mg (2 inhalations) twice daily	10 mg (2 inhalations) twice daily	10 mg (2 inhalations) twice daily
	1-4	**5-9**			
Chemoprophylaxis, influenza A and B	N/A†	10 mg (2 inhalations) once daily	10 mg (2 inhalations) once daily	10 mg (2 inhalations) once daily	10 mg (2 inhalations) once daily
Oseltamivir					
Treatment,§ influenza A and B	Doses varies by child's weight¶	Doses varies by child's weight¶	Doses varies by child's weight¶	75 mg twice daily	75 mg twice daily
Chemoprophylaxis, influenza A and B	Doses varies by child's weight**	Doses varies by child's weight**	Doses varies by child's weight**	75 mg/ day	75 mg/ day

NOTE: Zanamivir is manufactured by GlaxoSmithKline (Relenza® -- inhaled powder). Zanamivir is approved for treatment of persons aged 7 years and older and approved for chemoprophylaxis of persons aged 5 years and older. Oseltamivir is manufactured by Roche Pharmaceuticals (Tamiflu® -- tablet). Oseltamivir is approved for treatment or chemoprophylaxis of persons aged 1 year and older. No antiviral medications are approved for treatment or chemoprophylaxis of influenza among children aged less than 1 year. This information is based on data published by the Food and Drug Administration (FDA), which is available at www.fda.gov.

* Zanamivir is administered through oral inhalation by using a plastic deice included in the medication package. Patients will benefit from instruction and demonstration of the correct use of the device. Zanamivir is not recommended for those persons with underlying airway disease.

† Not applicable.

§ A reduction in the dose of oseltamivir is recommended for persons with creatinine clearance <30 mL/min.

¶ The treatment dosing recommendation for children weighing ≤15 kg is 30 mg twice a day; for children weighing >15-23 kg, the dose is 45 mg twice a day; for children weighing >23-40 kg, the dose is 60 mg twice a day; and for children >40 kg, the dose is 75 mg twice a day.

** The chemoprophylaxis dosing recommendations of oseltamivir for children weighing ≤15 kg is 30 mg once a day; for children weighing >15-23 kg, the dose is 45 mg once a day; for children weighing >23-40 kg, the dose is 60 mg once a day; and for children >40 kg, the dose is 75 mg once a day.

Appendix 2: Sample Case Log of Residents with Acute Respiratory Illness and/or Pneumonia

Patient Identification			Patient Location			Vaccination Status	Illness Description				Laboratory Confirmation		Illness Complications		
Name	Age	Sex	Building	Unit	Room #, Bed designation	Influenza (Y/N)	Date onset illness	Highest Temperature	Cough (Y/N)	Sore Throat (Y/N)	Rapid antigen test (Y/N, Not Done)	Viral culture	Pneumonia (Y/N)	Hospitalized (Y/N)	Died (Y/N, if yes, date)